REMARKS

Claims 1, 3-19, 21-24, 26-29, 31-39 and 41-49 are pending in the present application. Claims 1, 3-19, 21-24, 26-29, 31-39 and 41-49 have been examined and are rejected. In the above amendments, claims 1, 3, 4, 8, 10, 11, 13-15, 21, 23, 26, 28, 33-35, 37, 41 and 49 have been amended. Therefore, after entry of the above amendments, claims 1, 3-19, 21-24, 26-29, 31-39 and 41-49 will be pending in this application. Applicant believes that the present application is now in condition for allowance, for which prompt and favorable action is respectfully requested.

Rejection of Claims Under 35 U.S.C. §112, First Paragraph

Claims 1, 8, 10, 13, 15, 21, 23, 26, 41 and 49 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The rejection states that there is no support in the specification for the recited limitation "wherein each of the plurality of symbol blocks is transmitted at most once to the receiver." Applicant respectfully disagrees.

Paragraph [0038] of the present application states "the transmitter transmits one data symbol block at a time … until all N_B data symbol blocks are transmitted or an ACK is received from the receiver for the data packet." Paragraph [0047] of the present application states:

> "[0047] A channel interleaver 420 includes N_B block interleavers 422a through 422nb that receive the N_B coded subpackets from partitioning unit 416. Each block interleaver 422 interleaves (i.e., reorders) the code bits for its subpacket in accordance with an interleaving scheme and provides an interleaved subpacket. The interleaving provides time, frequency, and/or spatial diversity for the code bits. A multiplexer 424 couples to all N_B block interleavers 422a through 422nb and provides the N_B interleaved subpackets, one subpacket at a time and if directed an IR transmission control from controller 140. In particular, multiplexer 424 provides the interleaved subpacket from block interleaver 422a first, then the interleaved subpacket from block interleaver 422b next, and so on, and the interleaved subpacket from block interleaver 422nb last. Multiplexer 424 provides the next interleaved subpacket if a

NAK is received for the data packet. All N_B block interleavers 422a through 422nb can be purged whenever an ACK is received." (Emphasis added.)

Paragraph [0038] clearly describes transmitting one data symbol block at a time until all N_B data symbol blocks are transmitted or an ACK is received. Paragraph [0047] clearly describes providing N_B subpackets in a sequential order, with each subpacket being used to generate one data symbol block. Paragraphs [0038] and [0047] thus support the limitation "wherein each of the plurality of symbol blocks is transmitted at most once to the receiver" since (i) the N_B subpackets are selected in a sequential order and (ii) transmission terminates when all N_B subpackets have been transmitted.

Accordingly, the §112, first paragraph, rejection of claims 1, 8, 10, 13, 15, 21, 23, 26, 41 and 49 should be withdrawn.

Rejection of Claims Under 35 U.S.C. §112, Second Paragraph

Claims 28, 33, 35 and 37 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The rejection states that "a final iteration" in claims 28, 33, 35 and 37 is vague and indefinite.

Claims 28, 33, 35 and 37 have been amended to recite "performing the detecting and decoding for a plurality of iterations" and "generating a decoded packet based on an output from the decoding for a last iteration among the plurality of iterations." The phrase "a plurality of" is acceptable in claims even though it can cover many possibilities. The phrase "a last iteration among the plurality of iterations" is clear since it refers to the last or final iteration among the plurality of iterations introduced earlier in the claim. Applicant respectfully submits that the phrase "a last iteration" is clear in claims 28, 33, 35 and 37.

Accordingly, the §112, second paragraph, rejection of claims 28, 33, 35 and 37 should be withdrawn.

Rejection of Claims Under 35 U.S.C. §112, Second Paragraph

Claims 1, 8, 10, 13, 15, 21, 23, 26, 41 and 49 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim

the subject matter which Applicant regards as the invention. The rejection states that the limitation "transmitting remaining ones of the plurality of symbol blocks, one symbol block at a time, until the data packet is recovered correctly by the receiver or all of the plurality of symbol blocks are transmitted, wherein each of the plurality of symbol blocks is transmitted at most once to the receiver" is not clear. In particular, the rejection indicates that "it is not clear how the symbols are transmitted only once and they are recovered fully, if there were errors. If the symbols were not recovered correctly, it requires at least one retransmission which contradicts the first portion of the limitation."

As described in paragraph [0044] of the present application, a data packet may be encoded to generate a coded packet. As described in paragraph [0046], the coded packet may be partitioned into N_B coded subpackets. The first coded subpacket may include all systematic bits (i.e., the original information bits) and some parity bits (i.e., redundancy information). A receiver can recover the data packet with just the first coded subpacket under favorable channel conditions. Each remaining coded subpacket includes additional parity bits.

Each coded subpacket may be further processed (e.g., by symbol mapping unit 426 in FIG. 4A) to generate a corresponding block of data symbols (or symbol block). (See paragraph [0048].) A data packet may thus be processed (e.g., encoded and modulated) to generate N_B symbol blocks. The N_B symbol blocks contain different portions of the coded information for the data packet. A receiver may be able to recover the data packet based on one or more symbol blocks, depending on the channel conditions. Each subsequent symbol block after the first symbol block may be considered as a retransmission of the data packet. Applicant thus respectfully submits that the limitation deemed to be unclear by the Examiner is in fact clear.

Accordingly, the §112, second paragraph, rejection of claims 1, 8, 10, 13, 15, 21, 23, 26, 41 and 49 should be withdrawn.

<u>Rejection of Claims 1, 3, 5-14 and 41 Under 35 U.S.C. §103(a)</u>

Claims 1, 3, 5-14 and 41 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Piiranien (US 7,031,419) in view of Applicant Admitted Prior Art (AAPA) and further in view of Lakkis (US 7,031,371).

Claim 1 of the present application, as amended, recites:

> "A method of performing incremental redundancy (IR) transmission in a wireless multiple-input multiple-output (MIMO) communication system, comprising:
>
> obtaining a selected rate for data transmission on a MIMO channel between a plurality of transmit antennas at a transmitter and a plurality of receive antennas at a receiver, the selected rate indicating a particular data rate, or a particular coding scheme, or a particular code rate, or a particular modulation scheme, or a particular data packet size, or a combination thereof;
>
> encoding a data packet in accordance with the selected rate to obtain coded information for the data packet;
>
> processing the coded information for the data packet to obtain a plurality of symbol blocks, each symbol block including a different portion of the coded information for the data packet;
>
> transmitting a first symbol block from the plurality of transmit antennas at the transmitter to the plurality of receive antennas at the receiver, wherein the first symbol block is one of the plurality of symbol blocks; and
>
> transmitting remaining ones of the plurality of symbol blocks, one symbol block at a time, until the data packet is recovered correctly by the receiver or all of the plurality of symbol blocks are transmitted, wherein each of the plurality of symbol blocks is transmitted at most once to the receiver."

Applicant respectfully submits that claim 1 is patentable over Piiranien in view of the AAPA and Lakkis for at least the following reasons.

First, the combination of Piiranien, the AAPA and Lakkis does not disclose "<u>obtaining a selected rate</u> for data transmission on a MIMO channel," and "<u>encoding a data packet in accordance with the selected rate to obtain coded information</u> for the data packet" (emphasis added), as recited in claim 1. The rejection states that Piiranien does not expressly teach obtaining a selected rate for data transmission on a MIMO channel. The rejection then states that paragraph [0006] of the AAPA teaches this limitation.

Applicant respectfully submits that there is no teaching or suggestion to combine the AAPA and Piiranien in the manner suggested by the rejection. The AAPA describes a system in which a data packet is processed based on a selected rate and transmitted <u>in its entirety</u> if there is decoding error. Piiranien describes a system in which symbols to be

transmitted are divided into blocks at a transmitter, and the same blocks are retransmitted if there is decoding error. (See column 2, lines 30-29 of Piiranien.) Piiranien does not describe a mechanism for a receiver to estimate channel conditions, select a rate, and send the selected rate to the transmitter. Piiranien only describes the receiver sending a negative acknowledgement to the transmitter. (See column 11, lines 33-34 of Piiranien.) Piiranien relies on retransmission of the same blocks to change the effective rate of the symbols being transmitted. For example, the rate may be R after the first transmissions or blocks and may be R/2 after a retransmission of the same blocks. Applicant respectfully submits that there is no teaching or motivation to combine the AAPA with Piiranien, as suggested by the rejection.

Second, the combination of Piiranien, the AAPA and Lakkis does not disclose "each symbol block including a different portion of the coded information for the data packet" (emphasis added), as recited in claim 1. The rejection states that Piiranien and the AAPA do not teach this feature of claim 1 but that Lakkis describes this feature in column 1, line 40, column 7, lines 24-25, and column 8, lines 64-67. However, the "codes" mentioned in the cited sections of Lakkis actually refer to orthogonal/spreading codes used for spreading data by spreading section 72 in FIG. 3 of Lakkis. These "codes" are not related to the encoding by section 58 in FIG. 3 of Lakkis and are also not related to the "coded information" recited in claim 1. Furthermore, in claim 1, the coded information for a data packet is processed to obtain a plurality of symbol blocks, and one symbol block is transmitted at a time. In contrast, the "codes" in Lakkis are concurrently used to simultaneously send M unspread streams. (See FIG. 5 and column 5, lines 47-50 of Lakkis.) Hence, the cited sections of Lakkis do not describe the above feature of claim 1.

Third, the combination of Piiranien, the AAPA and Lakkis does not disclose "wherein each of the plurality of symbol blocks is transmitted *at most once* to the receiver" (emphasis added), as recited in claim 1. The rejection states that Piiranien describes this feature of claim 1 in the Abstract. The Abstract of Piiranien states "dividing the symbols to be transmitted into blocks, the number of which is divisible by the number of transmitting antennas; transmitting one block using each antenna; … and, if the reception of the blocks failed, … retransmitting the *same* blocks in a predetermined format" (emphasis added). Applicant respectfully submits that the Abstract of Piiranien clearly does not disclose transmitting each symbol block at most once, contrary to the assertion by the rejection.

For at least the above reasons, Applicant submits that claim 1 is patentable over Piiranien in view of the AAPA and Lakkis. Claims 5-7 and 9 are dependent on claim 1 and are patentable for at least the reasons noted above for claim 1. These dependent claims may recite additional features not disclosed nor suggested by Piiranien, the AAPA and Lakkis.

Independent claims 8, 10, 13 and 41 each recites the features noted above for claim 1. Claims 11 and 12 are dependent on claim 10, and claim 14 is dependent on claim 13. Claims 8-14 and 41 are patentable over the combination of Piiranien, the AAPA and Lakkis for at least the reasons noted for claim 1.

Accordingly, the §103(a) rejection of claims 1, 3, 5-14 and 41 should be withdrawn.

Rejection of Claims 15-19, 22-24, 26-29, 31-39 and 49 Under 35 U.S.C. §103(a)

Claims 15-19, 22-24, 26-29, 31-39 and 49 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tarokh (US 2004/0057530) in view of Lakkis (US 7,031,371).

Claim 15 of the present application recites:

> "A method of receiving an incremental redundancy (IR) transmission in a wireless multiple-input multiple-output (MIMO) communication system, comprising:
>
> obtaining a block of detected symbols for a data packet, wherein the detected symbol block is an estimate of a data symbol block transmitted from a plurality of transmit antennas at a transmitter and received by a plurality of receive antennas at a receiver, and wherein the data symbol block is one of a plurality of data symbol blocks generated for the data packet by encoding the data packet to obtain coded information for the data packet, each data symbol block including a different portion of the coded information for the data packet and being transmitted at most once to the receiver;
>
> decoding all detected symbol blocks obtained for the data packet to provide a decoded packet;
>
> determining whether the decoded packet is correct or in error; and
>
> repeating the obtaining, decoding, and determining for another one of the plurality of data symbol blocks if the decoded packet is in error."

Applicant respectfully submits that claim 15 is patentable over Tarokh in view of Lakkis for at least the following reasons.

First, the combination of Tarokh and Lakkis does not disclose "obtaining a block of detected symbols for a data packet, … wherein the data symbol block is one of a plurality of data symbol blocks generated for the data packet by encoding the data packet to obtain coded information for the data packet, each data symbol block including a different portion of the coded information for the data packet" (emphasis added), as recited in claim 15. The rejection states that Lakkis describes this feature of claim 15 in column 1, line 40, column 7, lines 24-25, and column 8, lines 64-67. However, as discussed above for claim 1, these cited sections of Lakkis describe different orthogonal/spreading codes used for spreading multiple substreams of data. The "codes" in the cited sections of Lakkis are thus very different from the "coded information" obtained by encoding the data packet, as recited in claim 15.

Second, the combination of Tarokh and Lakkis does not disclose "each data symbol block … being transmitted *at most once* to the receiver" (emphasis added), as recited in claim 15. Tarokh describes the use of space-time coding (STC), which is the same as the space-time block coding (STBC) described by Piiranien. Hence, Tarokh describes a transmitter retransmitting the *same* blocks if they are received in error. This is clearly shown in FIGS. 6 through 13 of Tarokh, with each figure showing blocks S1 and S2 being received in error and the *same* blocks S1 and S2 are retransmitted later.

Third, Tarokh teaches away from sending redundancy information. Paragraph [0024] of Tarokh states:

> "However, for transmission using multiple antennas, incremental redundancy schemes are not known. This is partially due to the fact that in a space-time channel, signals transmitted from different antennas superpose, and this makes it *difficult to improve the transmitted signals with increasing redundancy*. In this light, there is a need for a way to construct space-time codes to facilitate incremental redundancy in a spatially diverse communication environment."

Tarokh thus teaches away from using redundancy information (or coded information) to improve performance. Instead, Tarokh teaches sending the same symbols using space-time codes to improve performance.

For at least the above reasons, Applicant submits that claim 15 is patentable over Tarokh in view of Lakkis. Claims 16-19 are dependent on claim 15 and are patentable for at

least the reasons noted for claim 15. These dependent claims may recite additional features not disclosed nor suggested by Tarokh and Lakkis.

Independent claims 21, 23, 26 and 49 each recites the features noted above for claim 15. Claim 24 is dependent on claim 23, and claim 27 is dependent on claim 26. Claims 21, 23, 24, 26, 27 and 49 are patentable over Tarokh in view of Lakkis for at least the reasons noted above for claim 15.

Claim 28 of the present application, as amended, recites:

> "A method of receiving an incremental redundancy (IR) transmission in a wireless multiple-input multiple-output (MIMO) communication system, comprising:
>
> receiving a block of received symbols for a data packet, wherein the received symbol block is for a data symbol block transmitted from a plurality of transmit antennas at a transmitter and received by a plurality of receive antennas at a receiver, and wherein the data symbol block is one of a plurality of data symbol blocks generated for the data packet by encoding the data packet to obtain coded information for the data packet, each data symbol block including a different portion of the coded information for the data packet and being transmitted at most once to the receiver;
>
> detecting all received symbol blocks received for the data packet to obtain detected symbol blocks, one detected symbol block for each received symbol block;
>
> decoding the detected symbol blocks for the data packet to obtain decoder feedback information;
>
> performing the detecting and decoding for a plurality of iterations, wherein the decoder feedback information from the decoding for a current iteration is used by the detecting for a subsequent iteration; and
>
> generating a decoded packet based on an output from the decoding for a last iteration among the plurality of iterations."

Applicant respectfully submits that claim 28 is patentable over Tarokh in view of Lakkis for at least the following reasons.

First, the combination of Tarokh and Lakkis does not disclose "receiving a block of received symbols for a data packet, … wherein the data symbol block is one of a plurality of data symbol blocks generated for the data packet by encoding the data packet to obtain coded information for the data packet, <u>each data symbol block including a different portion of the</u>

coded information for the data packet" (emphasis added), as recited in claim 28. Lakkis does not describe this feature of claim 28, as discussed above for claim 1.

Second, the combination of Tarokh and Lakkis does not disclose "each data symbol block … being transmitted *at most once* to the receiver" (emphasis added), as recited in claim 28. Rather, Tarokh describes retransmission of the *same* blocks that are received in error, as discussed above for claim 15.

Third, the combination of Tarokh and Lakkis does not disclose "performing the detecting and decoding for a plurality of iterations, wherein the decoder feedback information from the decoding for a current iteration is used by the detecting for a subsequent iteration" (emphasis added), as recited in claim 28. The rejection indicates that this feature of claim 28 is disclosed by Tarokh in paragraph [0083]. This paragraph states "note that equation 13 provides zero-forcing results for equation 12. Other, more sophisticated algorithms, such as iterative MMSE and MLD, can be used to further improve the system performance." Tarokh mentions "iterative" only once and also mentions "MMSE" only once. Tarokh does not describe MMSE and also does not describe how iterative detection can be performed. Tarokh describes MLD in equations (4) through (8) and shows MLD operating on the received symbols $r_{1,m}$ and $r_{2,m}$. Although not described by Tarokh, MMSE also operates on the received symbols and provides detected symbols. Since MLD and MMSE both operate on the received symbols, one of ordinary skill in the art would select either MLD or MMSE. Hence, a reasonable interpretation of Tarokh might be "iterative MMSE" being one algorithm and "MLD" being another algorithm. Tarokh does not describe iterative MMSE and MLD being one algorithm and further does not provide any teaching on how this algorithm can be performed, thus making it non-enabling.

In contrast, claim 28 clearly recites a two-step process that includes (i) detecting received symbols to obtain detected symbols and (ii) decoding the detected symbol blocks to obtain decoder feedback information, which is used by the detecting step in a subsequent iteration. The "detecting" and "decoding" are thus performed on different symbols, and the output of one step is used as an input to the other step.

For at least the above reasons, Applicant submits that claim 28 is patentable over Tarokh in view of Lakkis. Claims 29, 31 and 32 are dependent on claim 28 and are patentable over Tarokh in view of Lakkis for at least the reason noted for claim 28. These

dependent claims may recite additional features not disclosed nor suggested by Tarokh nor Lakkis.

Independent claims 33 and 35 each recites the features noted above for claim 28. Claim 34 is dependent on claim 33, and claim 36 is dependent on claim 35. Claims 33-36 are patentable over Tarokh in view of Lakkis for at least the reason noted above for claim 28.

Claim 37 of the present application, as amended, recites:

> "A method of receiving a data transmission in a wireless multiple-input multiple-output (MIMO) communication system, comprising:
>
> detecting received symbols for a data packet to obtain detected symbols;
>
> decoding the detected symbols to obtain decoder feedback information;
>
> performing the detecting and decoding for a plurality of iterations, wherein the decoder feedback information from the decoding for a current iteration is used by the detecting for a subsequent iteration, wherein the detecting is performed based on a minimum mean square error (MMSE) detector for at least one iteration initially, and thereafter based on a maximal ratio combining (MRC) detector or a linear zero-forcing (ZF) detector for remaining ones of the plurality of iterations; and
>
> generating a decoded packet based on an output from the decoding for a final iteration among the plurality of iterations."

Applicant respectfully submits that claim 37 is patentable over Tarokh in view of Lakkis for at least the following reasons.

First, the combination of Tarokh and Lakkis does not disclose "performing the detecting and decoding for a plurality of iterations, wherein the decoder feedback information from the decoding for a current iteration is used by the detecting for a subsequent iteration" (emphasis added), as recited in claim 37. The Examiner indicates that this feature of claim 37 is disclosed by Tarokh in paragraph [0083]. As discussed above for claim 28, Tarokh does not describe iterative MMSE and MLD being one algorithm and further does not provide any teaching on how this algorithm can be performed, thus making it non-enabling. Furthermore, since MMSE and MLD both operate on received symbols, it seems that either MMSE or MLD (and not both) can be used to process the received symbols.

Second, the combination of Tarokh and Lakkis does not disclose "wherein the detecting is performed based on a minimum mean square error (MMSE) detector for at least one iteration initially, and thereafter based on a maximal ratio combining (MRC) detector or a linear zero-forcing (ZF) detector for remaining ones of the plurality of iterations" (emphasis added), as recited in claim 37. The Examiner indicates that this feature of claim 37 is disclosed by Tarokh in paragraph [0083]. This paragraph describes using one algorithm, which may be zero-forcing, or iterative MMSE, or MLD. This paragraph does not describe using one algorithm for at least one iteration initially and thereafter using another algorithm for the remaining iterations, as recited in claim 37.

For at least the above reasons, Applicant submits that claim 37 is patentable over Tarokh in view of Lakkis. Claim 38 is dependent on claim 37 and is patentable for at least the reasons noted for claim 37.

Accordingly, the §103(a) rejection of claims 15-19, 22-24, 26-29, 31-39 and 49 should be withdrawn.

Rejection of Claim 21 Under 35 U.S.C. §103(a)

Claim 21 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Tarokh in view of Alouini (US 6,304,593) and further in view of Lakkis.

Claim 21 of the present application, as amended, recites:

> "A method of receiving an incremental redundancy (IR) transmission in a wireless multiple-input multiple-output (MIMO) communication system, comprising:
>
> determining a rate for data transmission based on an average spectral efficiency for a plurality of transmit antennas at a transmitter, the rate indicating a particular data rate, or a particular coding scheme, or a particular code rate, or a particular modulation scheme, or a particular data packet size, or a combination thereof;
>
> obtaining a block of detected symbols for a data packet, wherein the detected symbol block is an estimate of a data symbol block transmitted from the plurality of transmit antennas at the transmitter and received by a plurality of receive antennas at a receiver, and wherein the data symbol block is one of a plurality of data symbol blocks generated for the data packet by encoding the data packet based on the rate to obtain coded information for the data packet, each data symbol block including a

different portion of the coded information for the data packet and being transmitted at most once to the receiver;

decoding all detected symbol blocks obtained for the data packet to provide a decoded packet;

determining whether the decoded packet is correct or in error; and

repeating the obtaining, decoding, and determining for another one of the plurality of data symbol blocks if the decoded packet is in error."

Applicant respectfully submits that claim 21 is patentable over Tarokh in view of Alouini and Lakkis for at least the following reasons.

First, the combination of Tarokh, Alouini and Lakkis does not disclose "obtaining a block of detected symbols for a data packet, … wherein the data symbol block is one of a plurality of data symbol blocks generated for the data packet by encoding the data packet based on the rate to obtain coded information for the data packet, <u>each data symbol block including a different portion of the coded information</u> for the data packet" (emphasis added), as recited in claim 21. Lakkis does not describe this feature of claim 21, as discussed above for claim 1.

Second, the combination of Tarokh, Alouini and Lakkis does not disclose "<u>each data symbol block</u> … <u>being transmitted *at most once*</u> to the receiver" (emphasis added), as recited in claim 21. Rather, Tarokh describes retransmission of the <u>*same* blocks</u> that are received in error, as discussed above for claim 15.

For at least the above reasons, Applicant submits that claim 21 is patentable over Tarokh in view of Alouini and Lakkis.

Accordingly, the §103(a) rejection of claim 21 should be withdrawn.

<u>Rejection of Claims 4 and 42-48 Under 35 U.S.C. §103(a)</u>

Claim 4 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Piiranien (US 7,031,419) in view of Applicant Admitted Prior Art (AAPA) and Lakkis (US 7,031,371) and further in view of Tarokh (US2004/0057530). Claim 4 is dependent on claim 1. The combination of Piiranien, the AAPA, and Lakkis does not disclose all of the elements of base claim 1, as discussed above. Hence, the combination of Piiranien, the AAPA, and Lakkis is an insufficient basis for the §103(a) rejection of dependent claim 4. Tarokh does not address the deficiencies of Piiranien, the AAPA, and Lakkis.

Claims 42-48 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tarokh in view of Haustein *et al* (US 7,366,520). Claims 42-48 are dependent on claims 15, 23, 26, 28, 33, 35 and 37, respectively. Tarokh does not disclose all of the elements of base claims 15, 23, 26, 28, 33, 35 and 37, as discussed above. Hence, Tarokh is an insufficient basis for the §103(a) rejection of dependent claims 42-48. Haustein does not address the deficiencies of Tarokh.

Accordingly, the §103(a) rejection of claims 4 and 42-48 should be withdrawn.

CONCLUSION

In light of the amendments contained herein, Applicant submits that the application is in condition for allowance, for which early action is requested.

Please charge any fees or credit any overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

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